

**WE CLAIM:**

1. A system for processing a simplified plastic container filled with a hot product, comprising the steps of:
  - filling a container body with the hot product in a production line, the container body having a simplified surface surrounding an interior of the container body and a projection extending from the container body;
  - capping the neck of the filled container body with a cap in the next operation of the production line;
  - cooling the container body filled with the hot product; and
  - pushing the projection extending from the cooled container body into the interior of the container body so that the resultant, filled and cooled container body is relatively free of structural geometry over a substantial portion of the simplified surface.
2. The system for processing a simplified plastic container according to Claim 1, wherein the cooling step produces a vacuum within the container body and substantially all of the vacuum is taken up by the pushing step.
3. The system for processing a simplified plastic container according to Claim 1, further comprising the step of blow-molding a parison to form the container body where the simplified surface of the container body has a neck, a shoulder area, a base, and a smooth side surface surrounding the interior of the container body, and the projection extends from the base of the container body before the filling step begins.
4. The system for processing a simplified plastic container according to Claim 3, further comprising the steps of:
  - after the forming of the container body in the blow-molding step, inverting the projection extending from the container body into the interior of the container body; and

prior to the filling step, repositioning the projection of the container body with a force so that the projection moves outside of the container body and extends from the container body.

5. The system for processing a simplified plastic container according to Claim 1, wherein the container body with the projection extending from the container is conveyed by its neck during the filling and capping steps.

6. The system for processing a simplified plastic container according to Claim 5, further comprising the step of dividing the production line of container bodies, after the capping step, into a number of lanes so that a number of container bodies are formed in lanes to prepare for placement in a container holding device.

7. The system for processing a simplified plastic container according to Claim 6, wherein a container body is picked up by a robotic arm and placed in the container holding device so that the projection extending from the container body projects through an opening in the container holding device, and the container holding device filled with container bodies is moved through a cooler to cool the hot product in respective container bodies.

8. The system for processing a simplified plastic container according to Claim 3, wherein the projection extends from one of the base, shoulder area, and neck of the container body.

9. The system for processing a simplified plastic container according to Claim 1, wherein the step of pushing the projection extending from the cooled container body into the interior of the container body includes positioning a panel with projections extending therefrom underneath a container holding device where the panel projections correspond with the container body projections extending through a respective opening of the container holding device; and moving the panel with projections against the container projections thereby forcing the container projections inside respective container bodies.

10. The system for processing a simplified plastic container according to Claim 1, wherein the container body has a grip portion in addition to the substantial portion of the simplified surface that is relatively free of structural geometry.
11. The system for processing a simplified plastic container according to Claim 1, wherein the substantial portion of the simplified surface has an ornamental section.
12. The system for processing a simplified plastic container according to Claim 2, further comprising at least a mini vacuum panel wherein the pushing of the projection takes up the majority of the resultant vacuum and the mini vacuum panel takes up the remainder.
13. A system for processing a plastic container with a vacuum panel incorporated into the container bottom so that a substantial portion of side walls of the container are relatively free of structural geometry, comprising:
- filling a container body with a hot product in a production line, the container body having a projection extending from the container bottom;
  - sealing the filled container body in the next operation of the production line;
  - cooling the container body filled with the hot product thereby creating a vacuum in the container; and
  - pushing the projection extending from the cooled container body into the interior of the container body with a first actuator to reduce distortion caused by the vacuum so that the resultant, hot-filled and cooled container body has sidewalls with a substantial portion that is relatively free of structural geometry and a generally planar container standing surface.
14. The system for processing a plastic container according to Claim 13, wherein the first actuator includes an extendable rod, said extendable rod being

extended to apply a compressive force to said projection projecting from the container bottom thereby moving said projection to its retracted position to reduce the volume of the container and minimize the distortion of the side walls of said container.

15. The system for processing a plastic container according to Claim 13, further comprising feeding a container holder and inserting a container with an extendable projection into the container holder with a second actuator including an extendable rod so that the container holder holds the container body during the filling, sealing and cooling process.

16. The system for processing a plastic container according to Claim 15, further comprising a container and container holder combining station including a container holding wheel rotating in one direction with a container feed-in assembly and a container holder feed-in assembly where the containers are held by the rotating container holding wheel and then are inserted in fed-in container holders.

17. The system for processing a plastic container according to Claim 16, further comprising second actuators arranged to move in a circular path corresponding to the path of the combined container and container holder where the second actuators are inserted into the neck of the container and push the extendable projection outside of the container while inserting the container into the respective container holder.

18. The system for processing a plastic container according to Claim 17, wherein the second actuators are deployed via a cam arrangement.

19. The system for processing a plastic container according to Claim 15, wherein the pushing of the projection extending from the cooled container body into the interior of the container body includes positioning a gripper to hold a container and then actuating the first actuator with an extendable rod through a

respective opening of the container holder with an upward force that is counteracted by the downward force of the gripper thereby forcing the container projection inside the container.

20. The system for processing a plastic container according to Claim 19, further comprising removing the container from the container holder after the projection is moved to a retracted position inside the interior of the container.

21. The system for processing a plastic container according to Claim 18, further comprising a circular path in which the containers and container holders move wherein the first actuators are arranged to move in a circular path corresponding to the path of the combined container and container holder where the first actuators apply a compressive force to push the extendable projection back inside the container.

22. The system for processing a plastic container according to Claim 21, wherein the second actuators are deployed via a cam arrangement.

23. A container handling system for handling a container in a processing system where the container has a vacuum panel at a bottom surface thereof and a geometrically unstable configuration when the vacuum panel is extended to project from the container bottom, said container handling system comprising:

a conveyor that moves said containers with a vacuum panel surface on a bottom surface thereof to another section of the container processing system; and  
a first actuator that moves the vacuum panel of each container to a retracted position inside each respective container after the filling and cooling sections of the processing system so that the container is returned to a geometrically stable configuration.

24. The container handling system according to Claim 23, further comprising a container holder having a central opening for receiving a container with a bottom vacuum panel having an extendable projection and a bottom with a hole corresponding to the extendable projection; and

a second actuator for moving the vacuum panel of the container to an extended position, projecting from the bottom container surface, to increase the volume in the container, prior to the filling and cooling sections of the processing system, where the container is supported by the container holder.

25. The container handling system according to Claim 24, where said second actuator includes an extendable rod, said extendable rod being extendable for moving the vacuum panel of the container to the extended position.

26. The container handling system according to Claim 25, further comprising a container, said container having a vacuum panel on a bottom side thereof, said extendable rod extending into said container for moving said vacuum panel to an extended position to increase the volume of said container so that said container can be filled with a hot-fill and post-cooling process without significantly distorting side walls of the container.

27. The container handling system according to Claim 26, further comprising a container having a vacuum panel on a bottom side thereof wherein said first actuator includes an extendable rod, said extendable rod being extended to apply a compressive force to said vacuum panel from an underside of said container to move said vacuum panel to the retracted position thereby reducing the volume of said container to minimize the distortion of said side walls of said container due to the resultant vacuum created during the cooling process.

28. The container handling system according to Claim 27 further comprising a container holder including a dish-shaped member, wherein said dish-shaped member has a transverse passage extending therethrough and a recess for receiving the container, and said extendable rod of said first actuator extends through said

traverse passage for applying the compressive force to said vacuum panel of said container.

29. The container handling system according to claim 24, further comprising:  
a third actuator to remove the container from said container holder; and  
a second conveyor to move the container after the container is removed  
from said container holder for further processing.